

DELTA SIGMA SHOTCRETE MACHINE USER'S MANUAL



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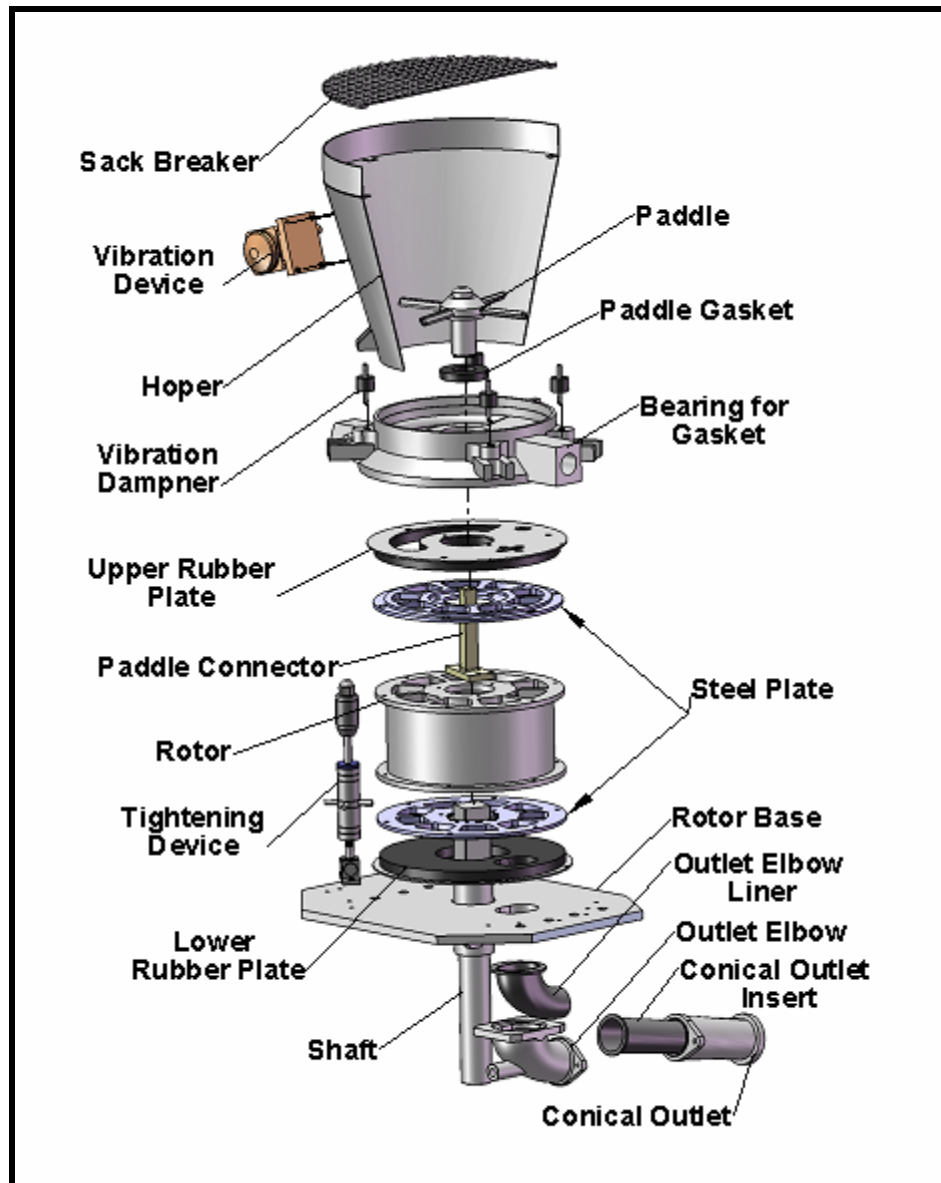
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FOREWORD

Dear Delta Sigma customer!

We wish to congratulate you on your purchase of Delta Sigma Shotcrete machine.

Delta Sigma is driven by one electrical motor (also it could be driven by a diesel engine or by an air motor). Machine is composed of those parts from top to down respectively: Sack Breaker, Hoper, Paddle and Paddle Gasket, Bearing for gasket, Upper Rubber Plate, Steel Plate, Rotor, Steel Plate, Lower Rubber Plate, Rotor Base, Outlet Elbow Liner and Outlet Elbow etc.



Dry mixture is added into the hoper and transported by paddle through the Bearing for Gasket. Rotor is placed under the Bearing. It is a part that has cavities in circular pattern and continuously droved by a shaft connected to the electrical motor. Also a

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compressed air supply is connected to the Bearing. While rotor is rotating, mixture comes down and spills into just one cavity of the rotor and also compressed air is supplied into the same cavity. Then this mixture is transported through hose to the shotcrete gun by the compressed air.

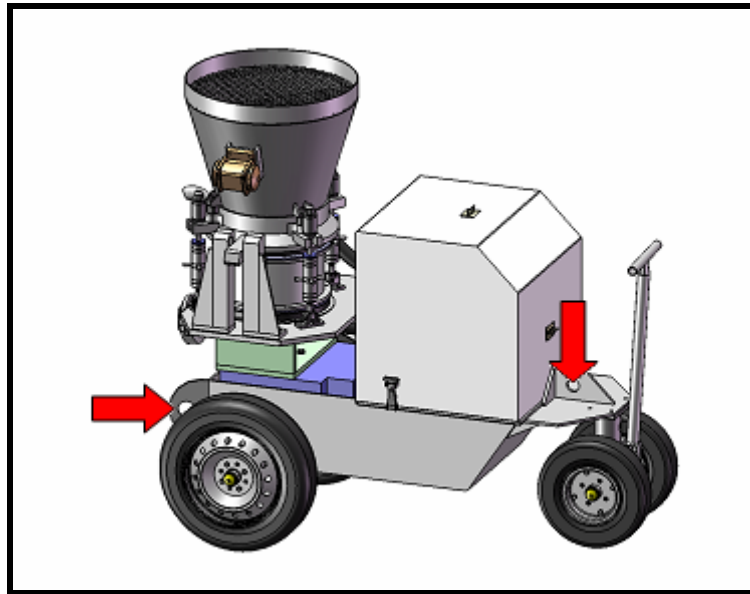
Water is added to the mixture by different type systems in the Shotcrete Gun. The mixture is dry until it comes in the Gun and it is wetted in the Gun in a proper rate by an adjustable valve. Then the wet mixture is shoted.

UNLOADING and TRANSPORTING

Before bring down the machine from truck, please first of all check your machine if it has any damages or fault. If it has any damages cause of transporting contact your transporter. Delta Makina Ltd is not responsible for those damages caused by transporters.

To lift down and transport the machine please use a forklift or winch has at least 800 kg lifting capacity.

Please while transporting the machine by a winch; make the connections as shown in the picture below.



POTENTIAL HAZARDS

The machine may only be operated for the operating instructions if it is in perfect condition conforming to the safety regulations. Faults that could affect safety must be remedied immediately.

WARRANTY AND LIABILITY

Our general terms and conditions of sale apply to warranty and liability. The purchaser will have received a copy on conclusion of the contract at the latest.

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Warranty and liability claims in the event of personal injury or material damage shall be excluded if they are caused by one or more of the following reasons:

Operation of the machine:

- Improper assembly, start-up, operation and maintenance of the machine.
- Operation of the machine with defective safety devices, or incorrectly fitted or non-functioning safety and protective devices.
- Non-observance of the directions in the operating instructions regarding transport, storage, start-up, running, maintenance and set-up of the machine.
- Unauthorized alterations to the motor (e.g. power or speed), shaft, rubber plate, steel plate, rotor, outlet elbow, air supply fittings, control etc.
- Inadequate monitoring of machine parts that are subject to wear and tear (e.g. upper and lower rubber plates, steel plates, paddle gasket, outlet elbow liner etc.)
- Unauthorized structural changes to the machine.
- Improperly carried out repairs.
- Unforeseen disasters as a result of external influence or force major.

Please note that the manufacturer's warranty shall expire if your machine is not operated and serviced in accordance with these operating instructions.

Delta Makina Ltd shall cancel all obligations entered into Delta Makina Ltd and/or its dealers, such as guaranties, service agreements etc. without notice if any other than original Delta Mini spare parts are used for operation, maintenance or repairs.

IMPROPER USE

Any uses for the Delta Sigma other than those operating instructions are prohibited. Delta Sigma Machine is not intended for mixing non machine processable mortar or other materials such as inflammable or potentially explosive substances.

In the event of improper use, the operator runs the risk of jeopardizing life, damaging the machine and other property, having unforeseeable impact on the environment and impairing efficient operation of the machine.

PERSONAL SAFETY

The machine purchaser must provide necessary personal safety equipment (Sack breaker etc.).

Delta Sigma Shotcrete Machine

All the existing safety devices on the machine must be inspected at regular intervals and checked to ensure that they are functioning properly.

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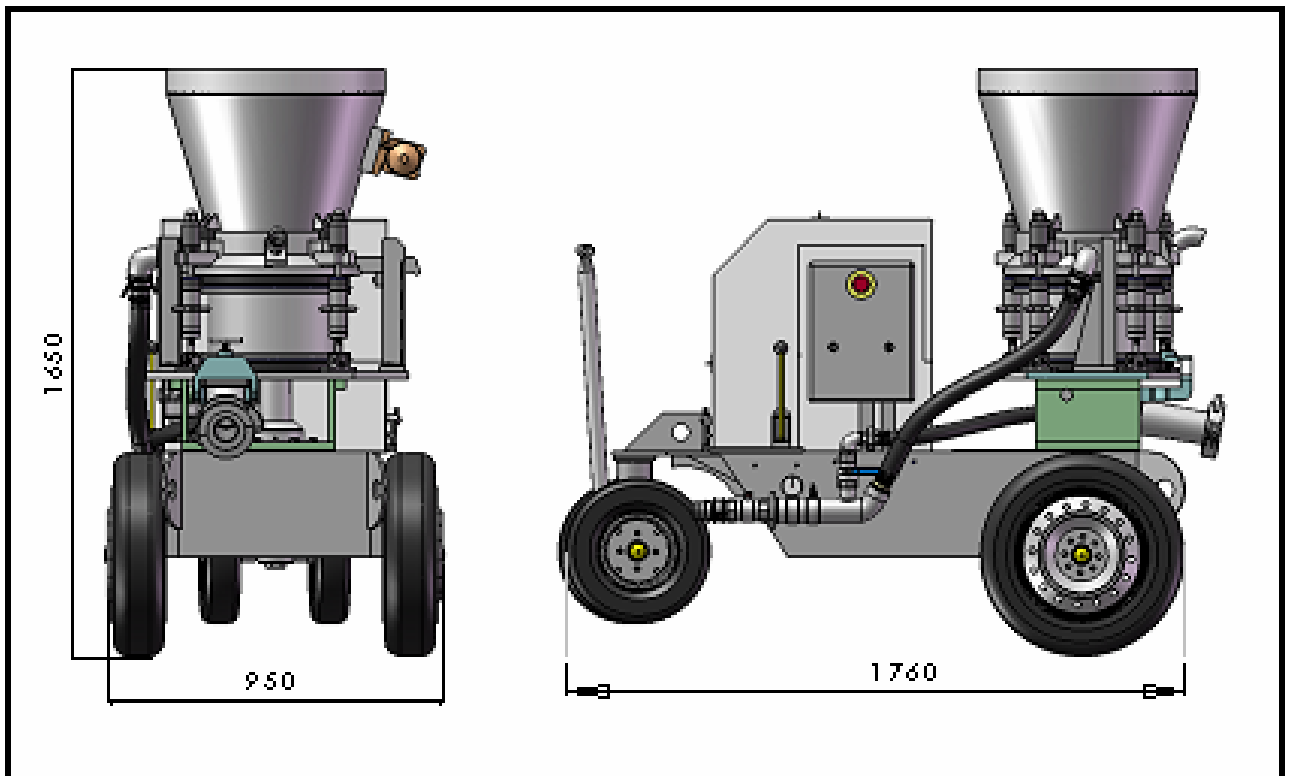
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Delta Makina Ltd reserve the right to alter any technical details of the machine compared with the specifications and illustrations.

MAIN DIMENSIONS

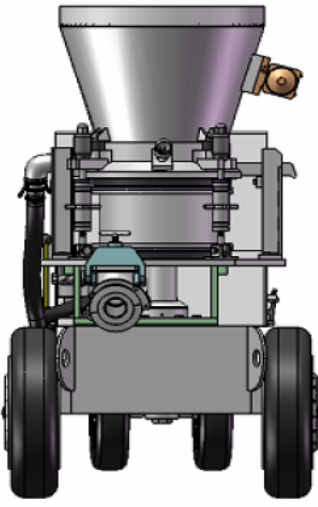
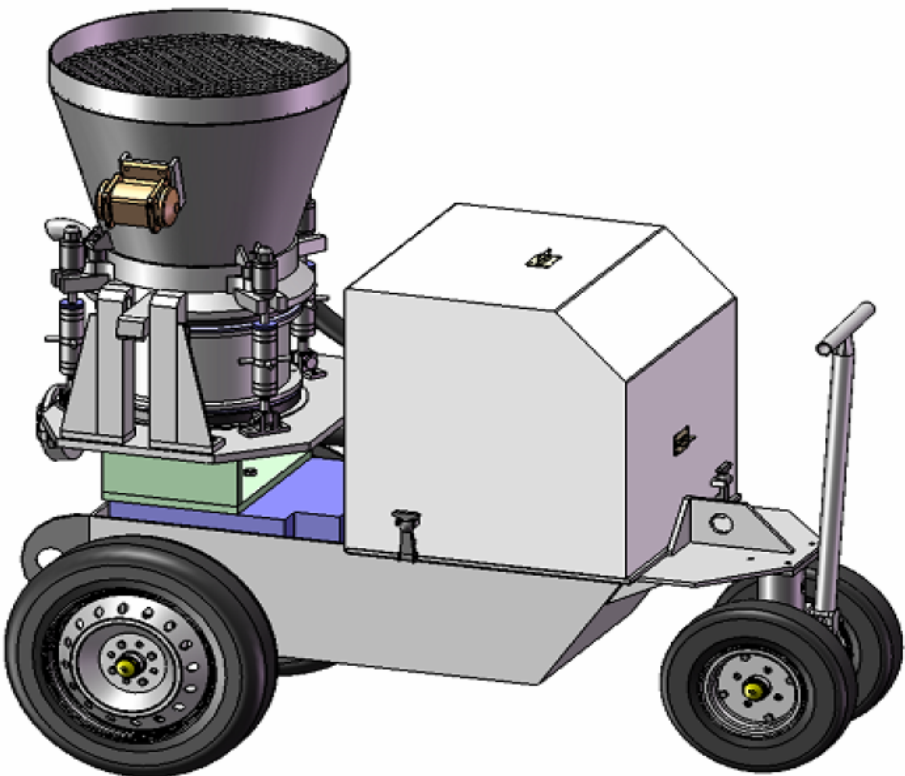
Delta Sigma Shotcrete Machine



Note: Dimensions are in mm.

Delta Sigma Shotcrete Machine

TECHNICAL DATA

	MODEL	Delta Sigma Shotcrete Machine
	CAPACITY*	7-8 m ³ /h
	AIR CONSUPTION*	11-14 m ³ /min
	ELECTRICAL MOTOR	3X380 V, 50 Hz, 5.5 Kw
	HOSE SIZE (mm)	2" or 2 1/2
	DIMENSIONS (mm)	950x1650x1760
	WEIGHT (kg)	750-800
	OPTIONAL COMPONENTS	
	Automatic Glycerine Lubrication	
	Hydraulic Clamping	
	Capacity control (Inverter)	
	Air Motor	
	Diesel Motor	
	* Depends on rotor, hose lenght, material humudity etc.	

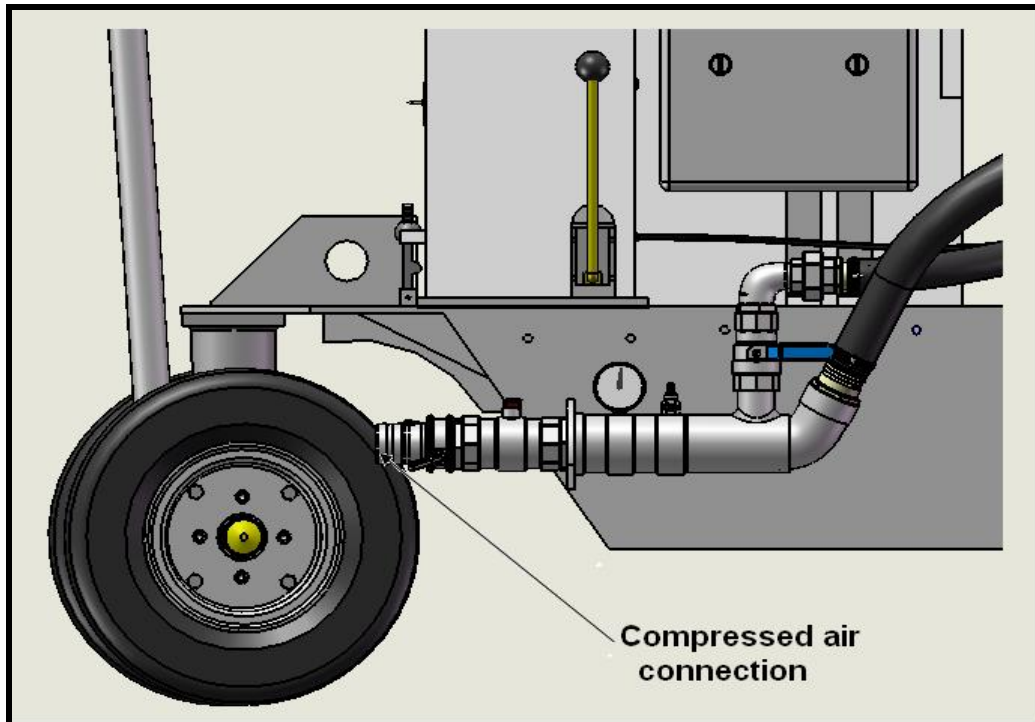
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APPLICATIONS



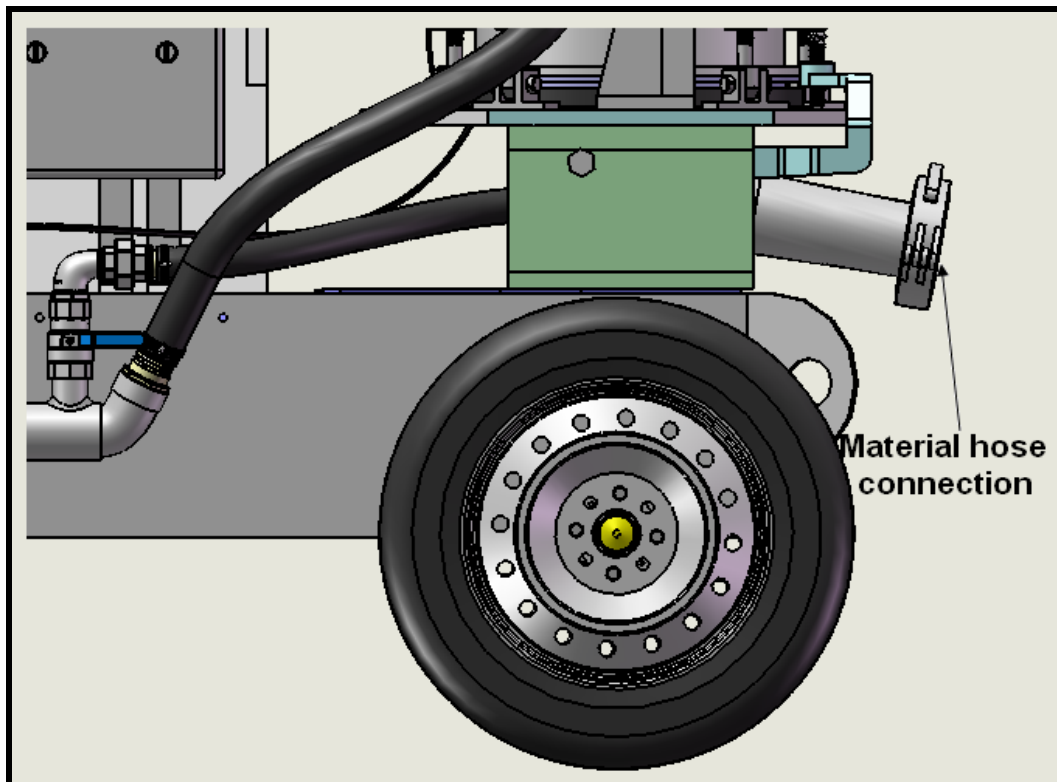
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CONNECTIONS BEFORE START UP



Picture-1: Compressed air connection

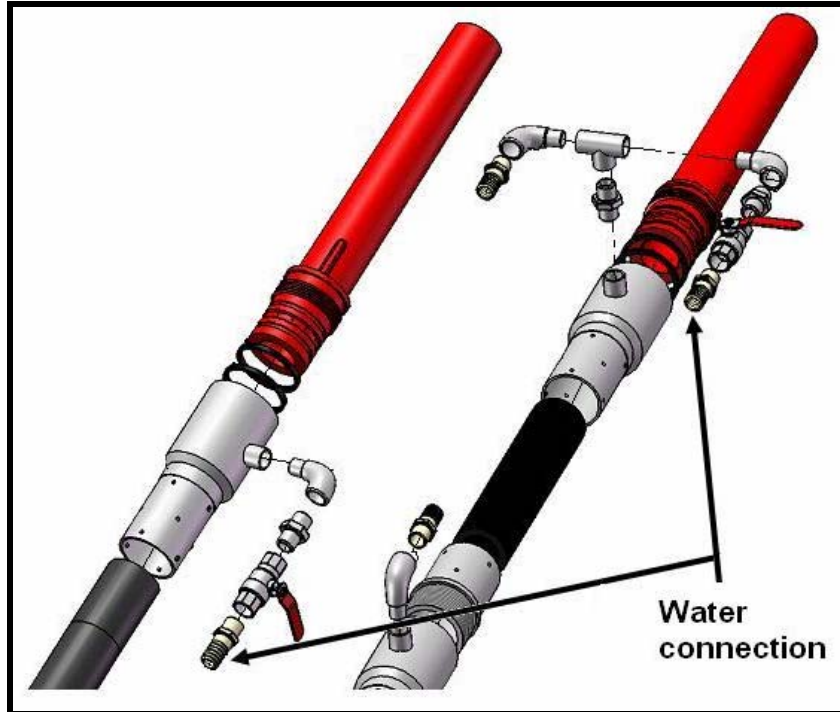
- Connect the air compressor hose to the machine properly as shown picture above. Use 2" ID hose only.



Picture-2: Material Hose Connection

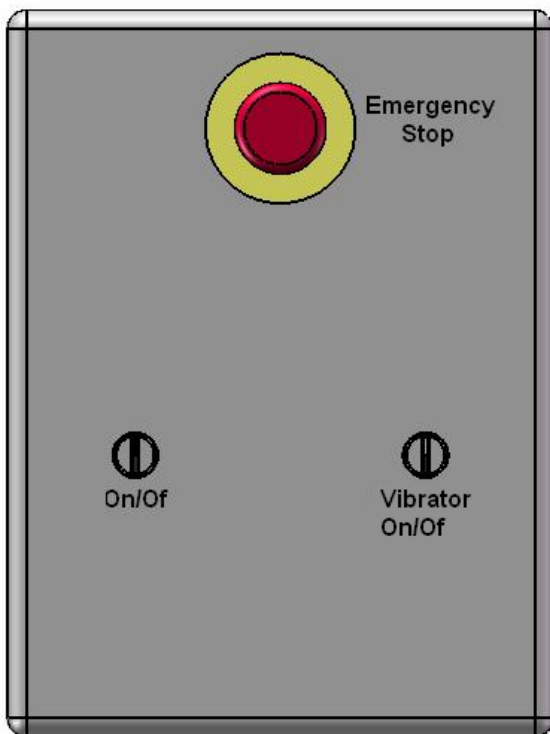
Delta Sigma Shotcrete Machine

- Connect the material hose by clamp properly as shown in the picture above.
- Connect the main electrical power cable to your electric network (3*380 V 50 Hz)



Picture-3: Water Hose Connection

- Connect the water supply hose to your nozzle or shotcrete gun as shown in picture above.



CONTROLS

A control panel is existed at the right hand side of your machine.

There are three buttons on the control panel as shown in the picture (Emergency, on/off, vibrator on/of).

Emergency: When Emergency button is pushed the machine will stop and it will not work unless it is repushed.

On/Off: This button is used to start or to stop the rotor.

Vibrator On/Of: Activating this button, operator can start or stop the vibration device.

OPERATING INSTRUCTIONS

These operating instructions contain the most important directions for a safe operation of the machine. The manual should always be kept in the tool box so that it is at hand when required.

Please read the operating instructions carefully before starting the machine to familiarize you with its handling and trouble free operation of the machine.

A working knowledge of the basic safety regulations and instructions is the prerequisite for safe handling and trouble free operation of the machine.

- To guarantee trouble-free start up, ensure that all the components have been cleaned properly and are in perfect condition.
- Check that the machine is horizontal and so that it can not slip if moved accidentally.
- Check that all the components are mounted properly.
- Check the compressed air supply connection properly. Be sure you use a minimum 2 "ID air hose and 11-14 m³/min, 7 Bar air compressor.
- Check the material hose connection.
- Check the electrical power connection (3x380 V 50 Hz 4 kW).
- Tighten the four clamping devices, first tighten all four clamps equally, then retighten the two near the air inlet.
- Make sure the emergency buttons are not pressed, and start the air flow by opening the ball valve, air will start flowing. (Make sure the nozzle man is holding the nozzle firmly).
- Check the air coming out of the nozzle, adjust as necessary.
- Turn on water and adjust from the nozzle valve in a proper rate.
- Activate "on/off button", rotor will start rotating.
- Pump a few strokes of glycerin to lubricate upper and lower plates.
- Start filling material to the hopper.
- Activate "vibrator on/off button", vibration device will start.
- Observe the material coming out of the nozzle; adjust air and water as necessary.
- Start shotcreting; adjust air, water and capacity of the machine as necessary.
- When done stop the rotor and wait until the material hose is empty. Turn off the water supply then stop the air flow.
- Now you are ready to clean and inspect the machine.

SPARE PARTS

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**SPARE PARTS
 FIGURE-A**

This exploded view diagram illustrates the assembly of the Delta Shotcrete-Refractory Spraying & Grouting Equipment. The components are numbered 1 through 18:

- 1**: Main chassis/frame
- 2**: Vertical support post
- 3**: Front wheel assembly
- 4**: Rear wheel assembly
- 5**: Axle assembly
- 6**: Side panel
- 7**: Right wheel assembly
- 8**: Motor housing
- 9**: Motor shaft
- 10**: Motor housing
- 11**: Vertical support post
- 12**: Vertical support post
- 13**: Vertical support post
- 14**: Top panel
- 15**: Side panel
- 16**: Side panel
- 17**: Side panel
- 18**: Wheel assembly

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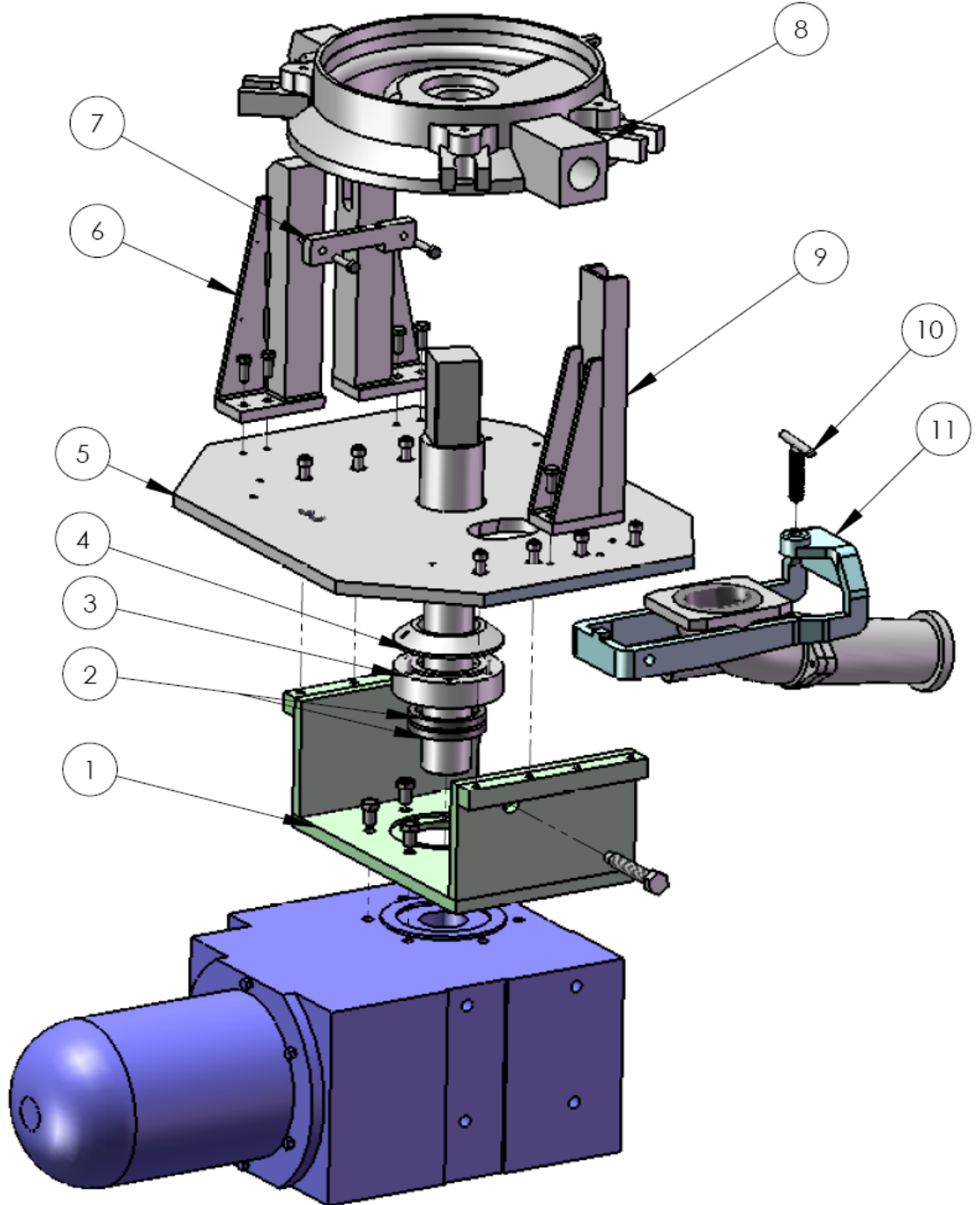
Delta Sigma Shotcrete Machine

Table-1: Spare parts descriptions for Figure-A

ITEM	DESCRIPTION	PART NUMBER
1	Support of front axe	
2	Puller shaft	
3	Pin of puller shaft	
4	Pneumatic front wheel	
5	Front axe	
6	Chassis	
7	Pneumatic rear wheel	
8	Screw	
9	Rolling protection cover	
10	Electrical group	
11	Shaft	
12	Panel	
13	Hood	
14	Handle	
15	Electrical panel mount	
16	Lubrication pump	
17	Rubber strap	
18	Lubrication pump mount	

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**SPARE PARTS
FIGURE B**



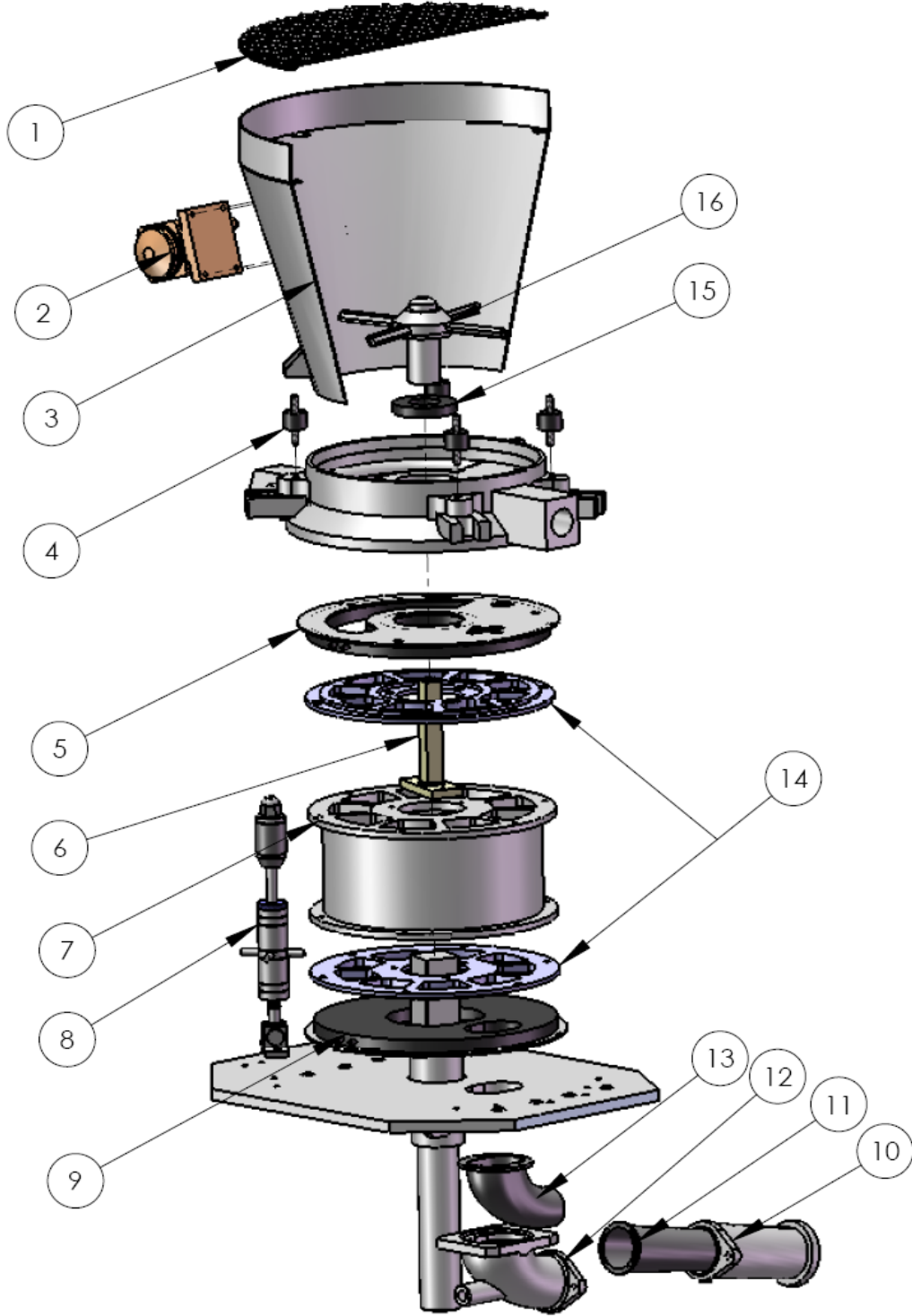
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Table-2: Spare parts descriptions for Figure-B

ITEM	DESCRIPTION	PART NUMBER
1	Rotor base plate	
2	Felt	
3	Fixed bearing for felts	
4	Fixed cover	
5	Rotor base	
6	Tipping gear	
7	Gasket bearing stopper	
8	Bearing for gasket	
9	Bearing rib	
10	"T" Screw	
11	Fixation swing	

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**SPARE PARTS
FIGURE-C**



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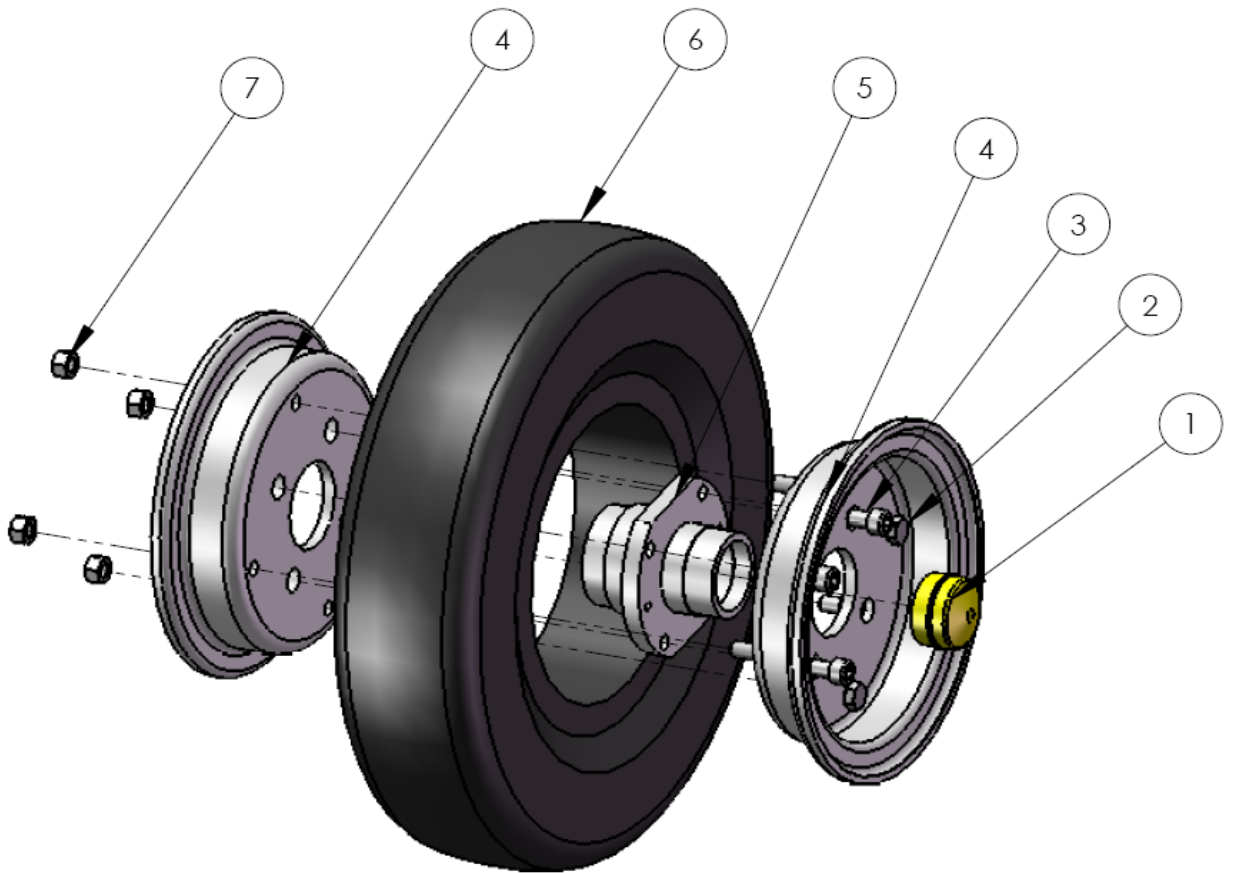
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Table-3: Spare parts descriptions for Figure-C

ITEM	DESCRIPTION	PART NUMBER
1	Sack breaker	
2	Pneumatic vibrator	
2	Electrical vibrator	
3	Feed hopper	
4	Vibration dampers	
5	Upper rubber plate	
6	Upper shaft	
7	Rotor	
8	Tightening device	
9	Lower rubber plate	
10	Conical outlet	
11	Conical outlet insert	
12	Outlet elbow	
13	Outlet elbow liner	
14	Friction disk	
15	Paddle gasket	
16	Paddle	

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**SPARE PARTS
FIGURE-D**



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Table-4: Spare parts descriptions for Figure-D

ITEM	DESCRIPTION	PART NUMBER
1	Grease cover	
2	Hex Screw	
3	Socket Head Cap Screw	
4	Rim	
5	Wheel Hub	
6	Tire	
7	Nut	

Table-5: Spare parts descriptions for Figure-E

ITEM	DESCRIPTION	PART NUMBER
1	Tire	
2	Wheel Hub	
3	Rim	
4	Grease cover	

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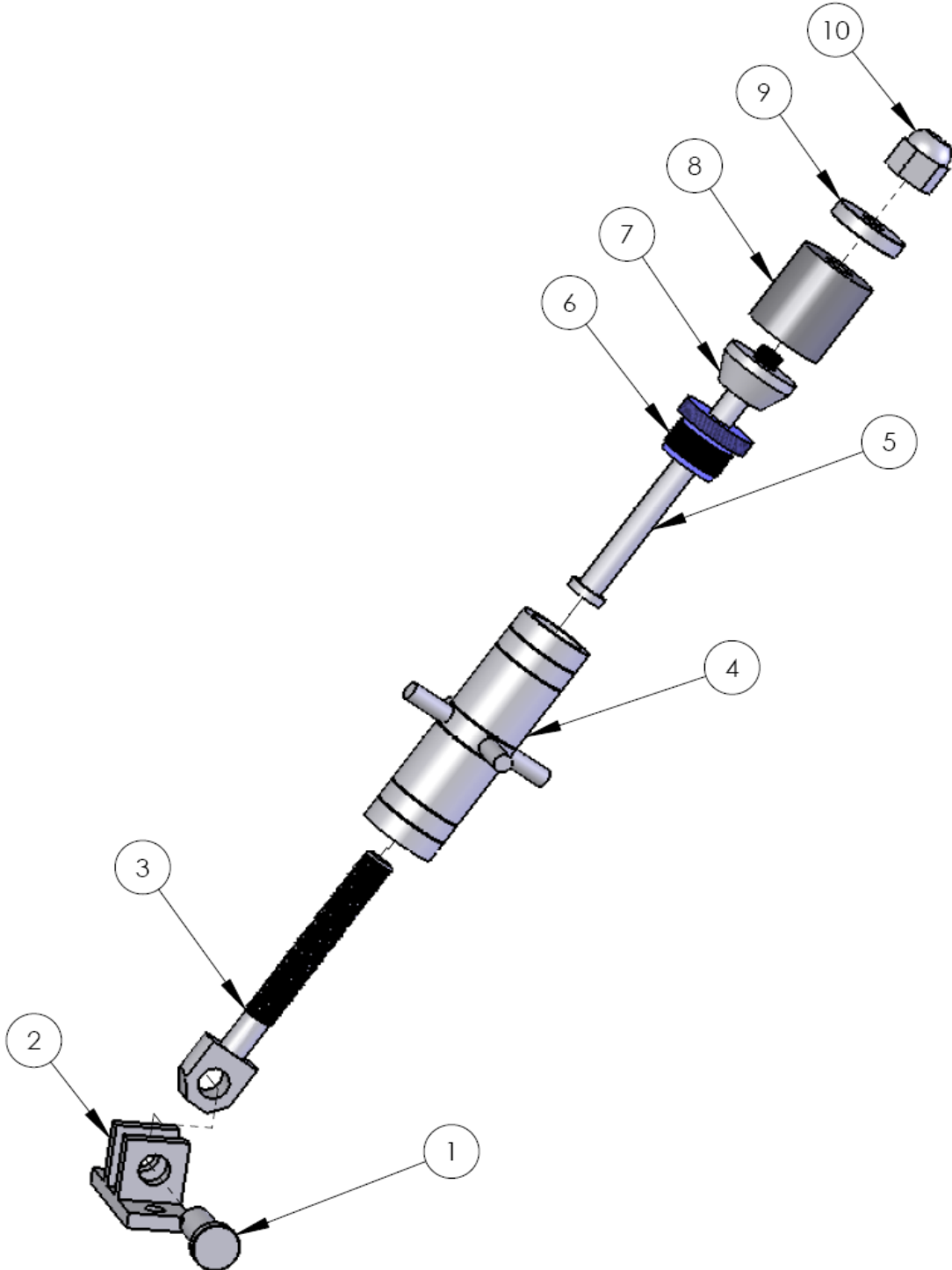
**SPARE PARTS
FIGURE-E**



Delta Sigma Shotcrete Machine

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SPARE PARTS FIGURE-F



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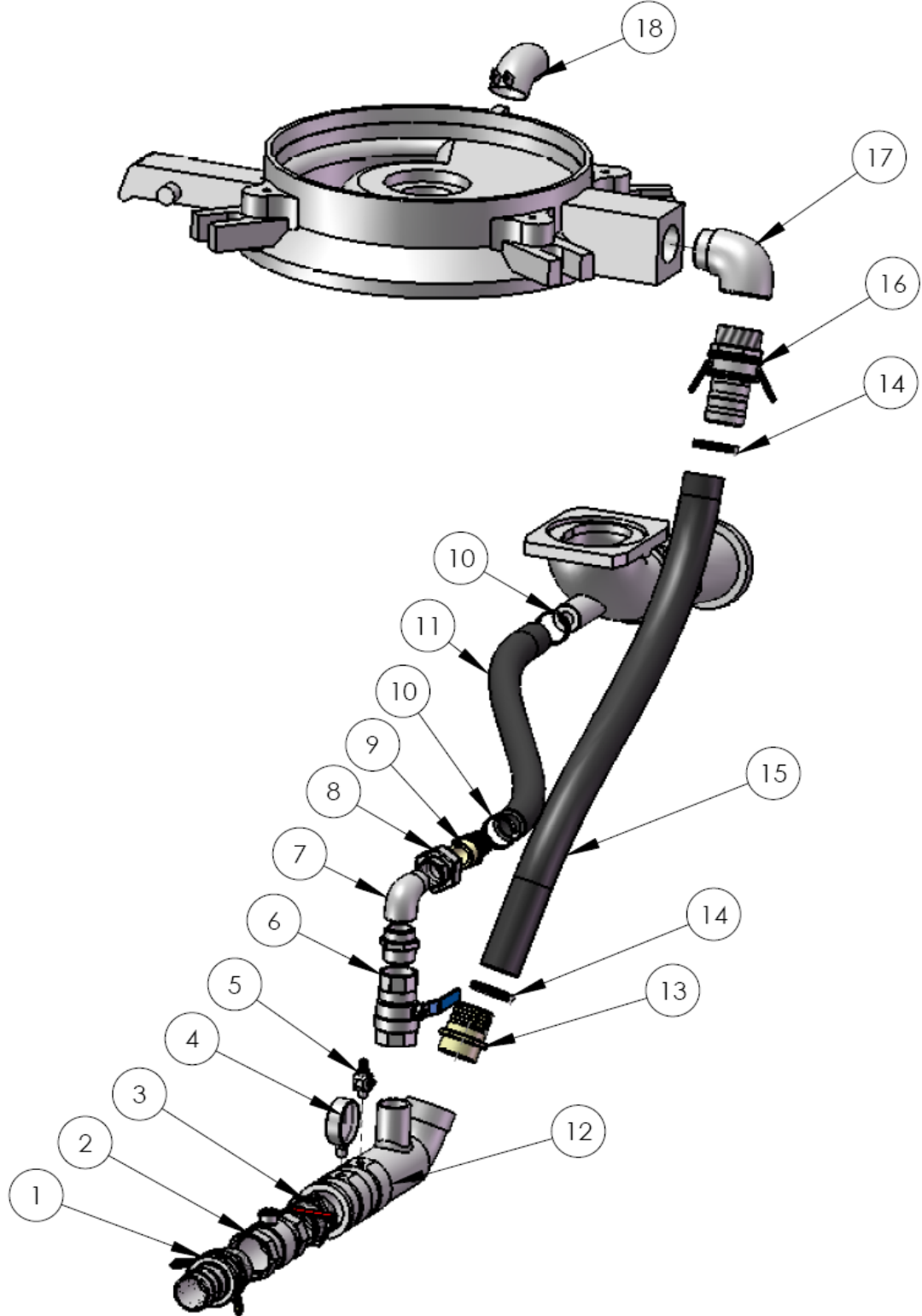
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Table-6 Spare parts descriptions for Figure-F

ITEM	DESCRIPTION	PART NUMBER
1	Pin	
2	Holder	
3	Bolt	
4	Body	
5	Stem	
6	Threaded cover	
7	Conical washer	
8	Chock	
9	Washer	
10	Nut	

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**SPARE PARTS
FIGURE-G**



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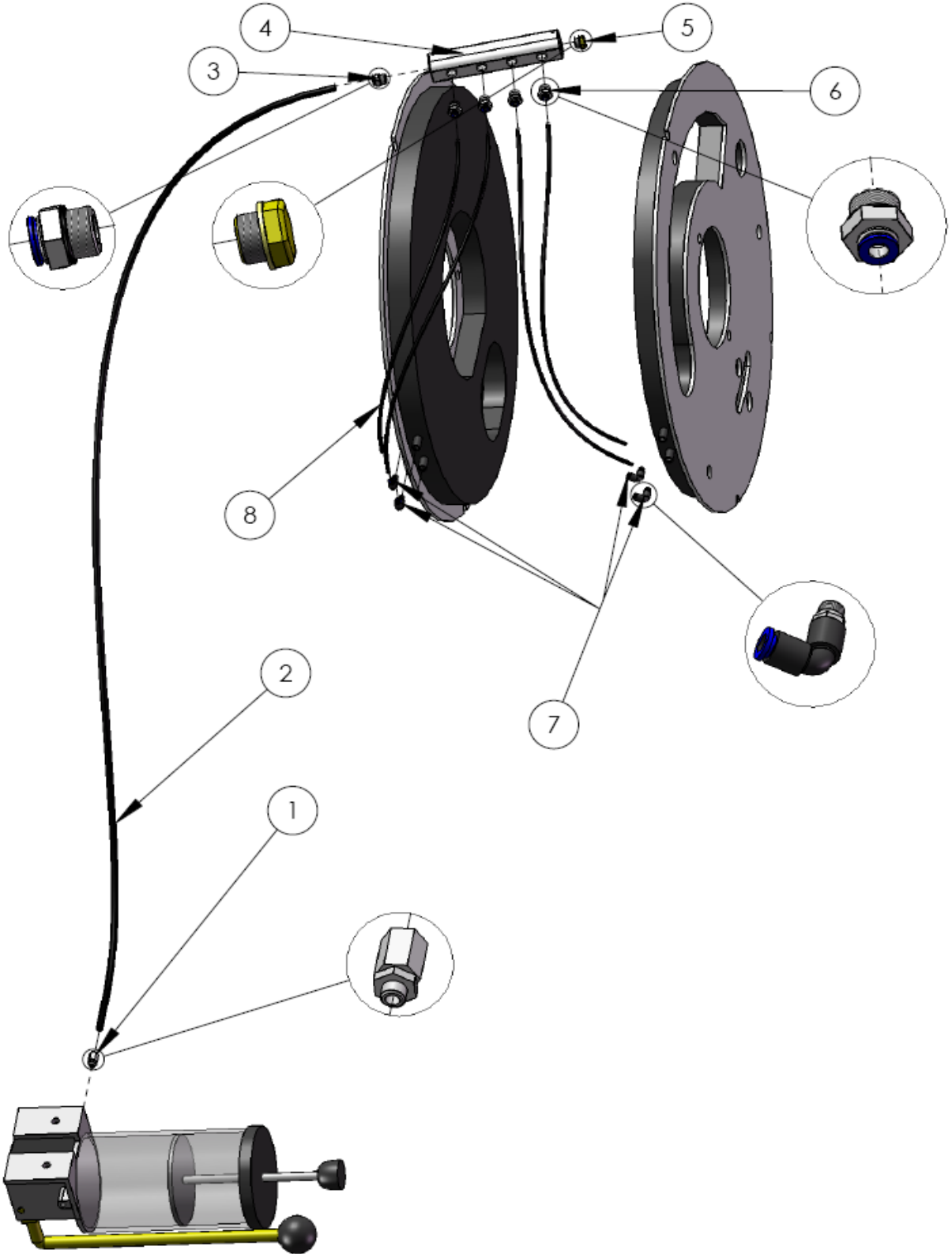
Table-7: Spare parts descriptions for Figure-G

ITEM	DESCRIPTION	PART NUMBER
1	Camlock	
2	Ball valve	
3	Nipple	
4	Manometer	
5	Pipe collar	
6	Ball valve	
7	Elbow	
8	Union	
9	Hose coupling	
10	Pipe collar	
11	Hose	
12	Air manifold	
13	Hose coupling	
14	Pipe collar	
15	Valf	
16	Manometer	
17	Elbow	
18	Exhaust	

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SPARE PARTS FIGURE-H



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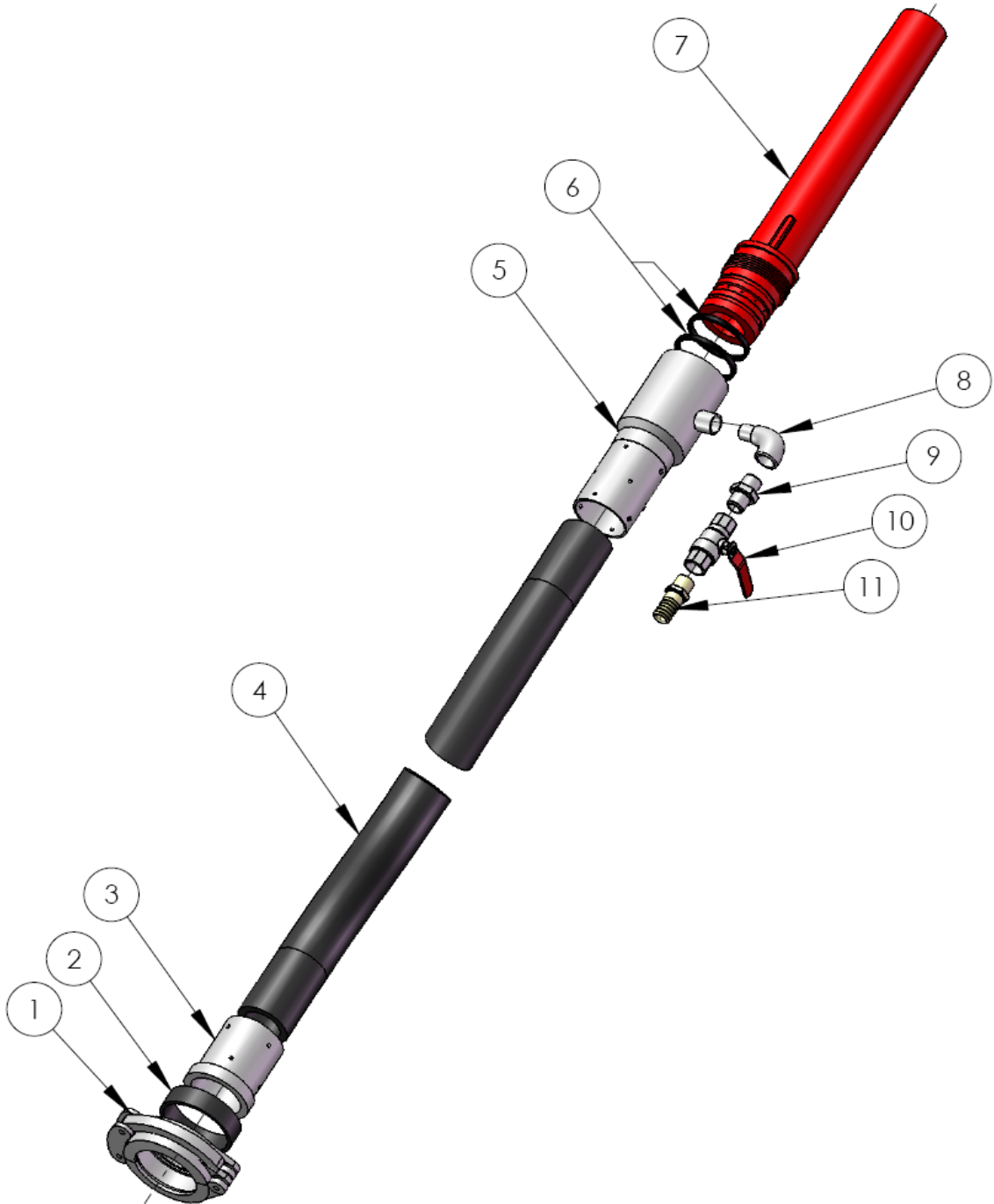
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Table-8: Spare parts descriptions for Figure-H

ITEM	DESCRIPTION	PART NUMBER
1	Lubrication pipe nipple	
2	Lubrication pipe (OD12)	
3	Push-in lubrication fitting (ID12)	
4	Lubrication manifold	
5	Plug	
6	Push-in lubrication fitting (ID6)	
7	Push-in lubrication elbow (ID6)	

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**TRANSPORTING SYSTEM
with 50X70 HOSE
FIGURE-K**



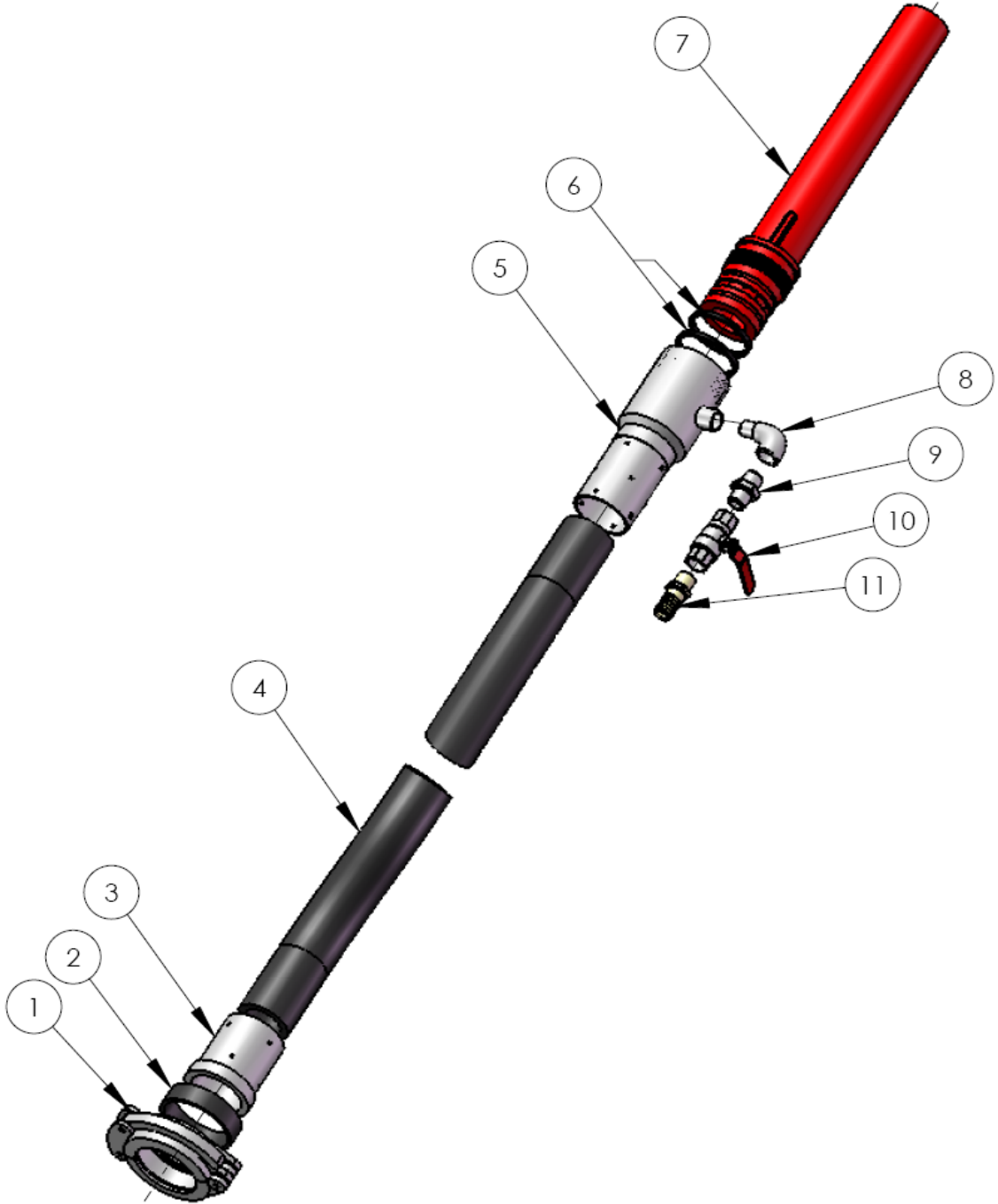
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Table-9: Spare parts descriptions for Figure-K

ITEM	DESCRIPTION	PART NUMBER
1	Quick Coupling 4"	
2	Quick Coupling Gasket 4"	
3	50x70 Hose Adaptor	
4	50x70 Shotcrete Hose	
5	Body of Shotcrete Gun	
6	O-Rings	
7	ID 50 Shotcrete Nozzle Pipe	
8	Elbow	
9	Connecting Nipple	
10	Ball Valve	
11	Hose Connector	

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**TRANSPORTING SYSTEM
with 65X85 HOSE
FIGURE-L**



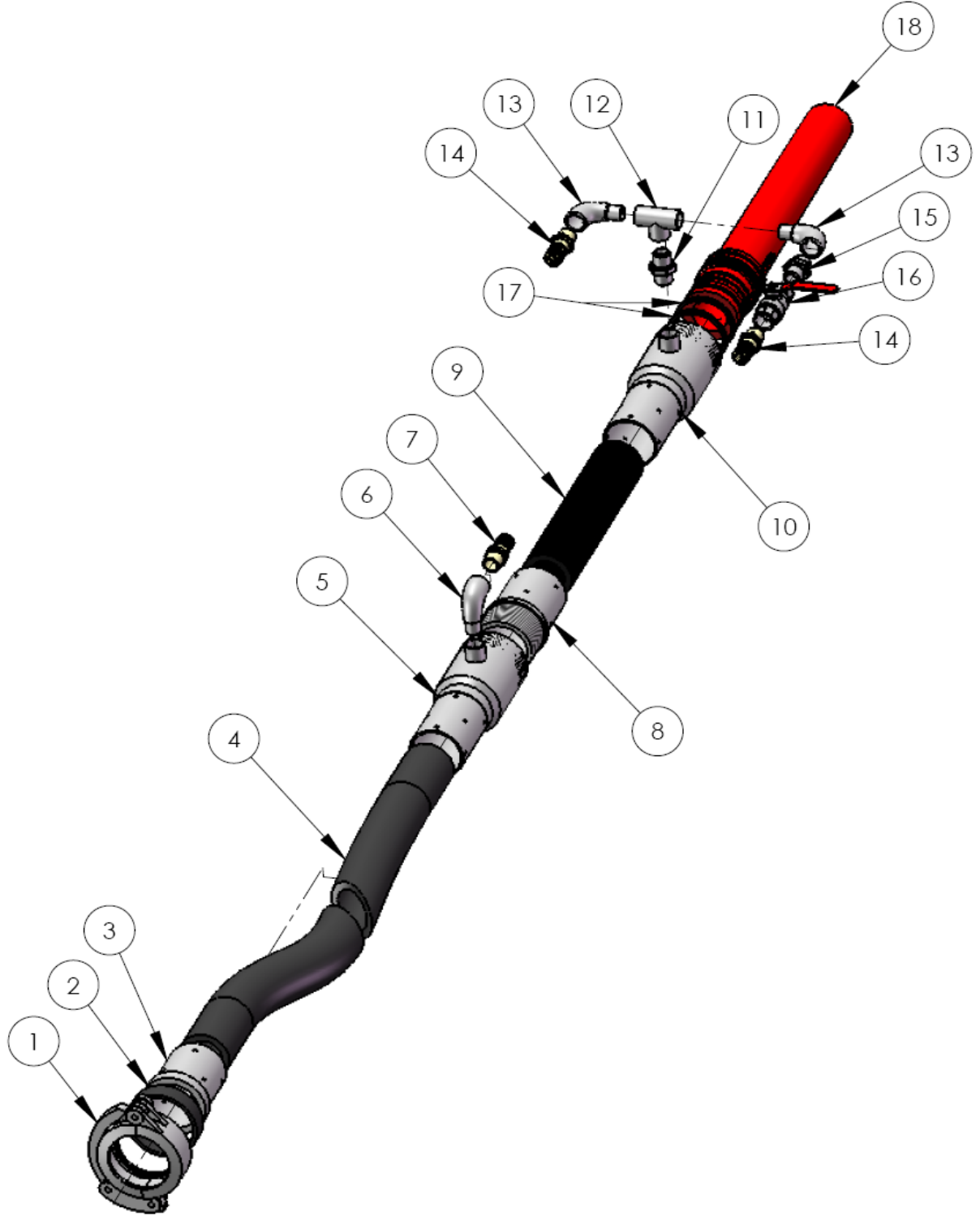
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Table-10: Spare parts descriptions for Figure-L

ITEM	DESCRIPTION	PART NUMBER
1	Quick Coupling 4"	
2	Quick Coupling Gasket 4"	
3	65x85 Hose Adaptor	
4	65x85 Shotcrete Hose	
5	Body of Shotcrete Gun	
6	O-Rings	
7	ID 65 Shotcrete Nozzle Pipe	
8	Elbow	
9	Connecting Nipple	
10	Ball Valve	
11	Hose Connector	

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**SPARE PARTS
(BACK FEED TRANSPORTING
SYSTEM with 50X70 HOSE)
FIGURE-M**



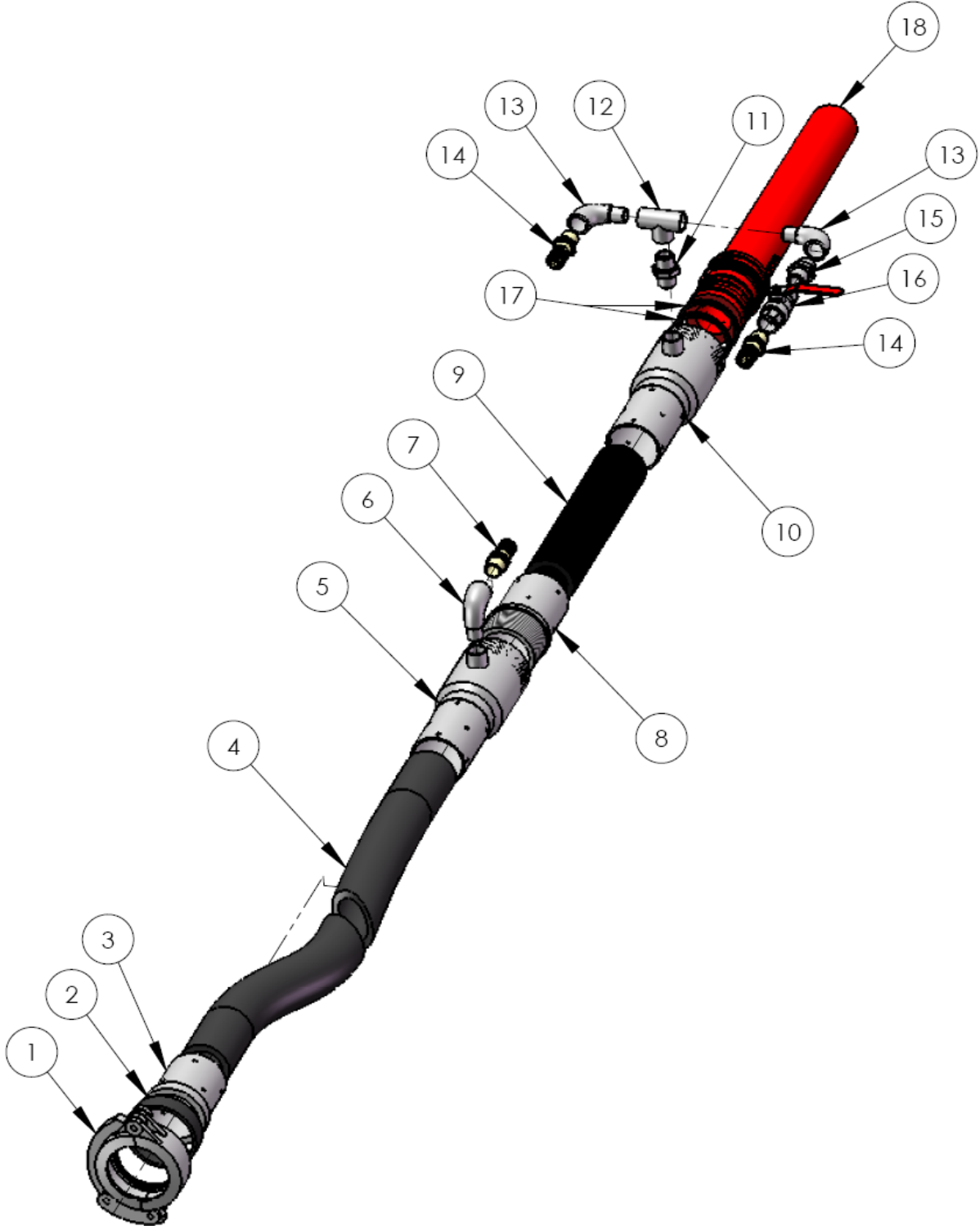
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Table-11: Spare parts descriptions for Figure-M

ITEM	DESCRIPTION	PART NUMBER
1	Quick Coupling 4"	
2	Quick Coupling Gasket 4"	
3	50x70 Hose Adaptor	
4	50x70 Shotcrete Hose	
5	Body of Shotcrete Gun	
6	Elbow	
7	Connecting Nipple	
8	Water Feed Back Body for ID50 Hose	
9	50x70 Shotcrete Hose	
10	Body of Shotcrete Gun for ID 50 Hose	
11	Connecting Nipple	
12	Connecting T	
13	Elbow	
14	Hose Connector	
15	Connecting Nipple	
16	Ball Valve	
17	O-Ring	
18	Nozzle Pipe ID 50	

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**SPARE PARTS
(BACK FEED TRANSPORTING
SYSTEM with 65X85 HOSE)
FIGURE-N**



Delta Sigma Shotcrete Machine

Table-12: Spare parts descriptions for Figure-N

ITEM	DESCRIPTION	PART NUMBER
1	Quick Coupling 4"	
2	Quick Coupling Gasket 4"	
3	65x85 Hose Adaptor	
4	65x85 Shotcrete Hose	
5	Body of Shotcrete Gun	
6	Elbow	
7	Connecting Nipple	
8	Water Feed Back Body for ID65 Hose	
9	65x85 Shotcrete Hose	
10	Body of Shotcrete Gun for ID65 Hose	
11	Connecting Nipple	
12	Connecting T	
13	Elbow	
14	Hose Connector	
15	Connecting Nipple	
16	Ball Valve	
17	O-Ring	
18	Nozzle Pipe ID65	

ELECTRICAL SYSTEM

